

Partnership Opportunity Document (POD)

With

NASA Goddard Space Flight Center (GSFC)

For a

Star Tracker

August 2014

General Information

Procurement supplied

Contracting Office Address

NASA/Goddard Space Flight Center, Code 210.S, Greenbelt, MD 20771

1.0 Introduction and Scope

This proposal opportunity is for a NASA Second Stand Alone Missions of Opportunity Notice (SALMON-2) for a 2014 Astrophysics Explorer Mission of Opportunity (MoO). The draft Program Element Appendix (PEA) was released July 14, 2014. NASA GSFC is seeking a partner to provide a star tracker to be used with a telescope for a potential proposal. The potential GSFC MoO instrument is designed to meet the science goals of the Explorer Program, as currently understood.

GSFC instrument teams will be submitting proposals to this Astrophysics Explorers PEA. This is a two-step process with initial proposals due 90 days after release of the final PEA. Information on the release of the PEA can be found at:

<http://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={F14AC3B1-F0DF-89F5-2625-8341199C12B5}&path=open>.

The following key dates are from the draft PEA:

Final AO release	Late Summer/Early Fall 2014
Pre-proposal Conference	~3 weeks after AO release
Proposals due	90 days after final PEA release
Competitive Phase A Selection	Summer 2015
Concept Study Reports Due	Summer 2016
Final Selection	Early 2017

This partnership opportunity is being issued to select a teaming partner to help prepare the GSFC Explorer candidate MoO instrument concept for the proposal submittal. The major flight system GSFC is interested in finding partners for is a star tracker.

There will be no exchange of funds between the teaming partners for the portion of this partnership opportunity dealing with the preparation of the initial proposal submission to the Explorer PEA. Full funding will be available for subsequent phases should the MoO instrument/mission be competitively selected for those additional phases. Additionally, release of this POD does not commit GSFC to enter into a partnership.

2.0 Mission Overview

Desired telescope flight system - GSFC is interested in finding a partner for a star tracker for the referenced Astrophysics Explorer MoO. No other subsystems of the instrument are part of this POD.

Detailed information on the mission parameters of potential Explorer missions will be provided to those responding with a Notice of Interest. A Notice of Interest (it is intentionally not called a notice of intent) does not obligate an organization to provide a POD response.

3.0 Pre-selection Support

3.1 Initial Proposal Support

SOW: It is expected that the selected respondent will provide support using their own resources to help develop and write the Mission proposal in response to the PEA in the area of the star tracker design, related subsystems, and mission implementation. This will involve meeting with scientists and the overall mission engineering team to: (a) help define the end-to-end performance and interface requirements; (b) identify study topics; and (c) predict performance. This will include cost estimation for all mission phases. The period of performance for this interval is expected from POD selection to Step 1 proposal submission (~4 months), starting approximately August 2014.

3.2 Phase A Study and Phase A Proposal Support

SOW: If the mission is selected for a Phase A study, the proposal team will receive funding to conduct a Phase A study and submit a detailed Concept Study Report (CSR) to NASA. The respondent providing the star tracker will be allocated a portion of this total to continue proposal support during the CSR duration. The respondent will be expected to contribute to designing, documenting, and costing the star tracker for inclusion in the final Concept Study Report. The period of performance for this interval is detailed in the above timeline.

POD Response Instructions for Pre-Selection Support

The respondent shall:

- 1) Demonstrate understanding and demonstrated experience in the design, fabrication, integration and testing of the star tracker under consideration:
 - Identify the means of addressing system requirements your team assumes are likely to exist and tasks the system is intended for,
 - Highlight particularly critical or challenging areas for the design,
 - Provide a technical summary/description of the proposed hardware including relevant heritage

- 2) Identify any recommended potential study topics related to the star tracker.
- 3) Indicate the level of resources to be allocated for the proposal phase.
 - Discuss skills that will be provided, the appropriate level of conceptual design, and all relevant analyses and trade studies.
- 4) Identify the pertinent missions for whom they have previously provided support for proposal writing in the area of star tracker design, fabrication, integration and testing:
 - Provide data on scope of the star tracker, the role that they played in the proposal process, and the portions of the proposal they have written or provided assistance in writing. Provide a customer reference POC.
 - Describe how this proposal role mapped to their role in the end instrument development. If the scope changed, explain why.

4.0 Development Support

SOW: If the mission is selected for development and launch, the respondent will be responsible for the design, development, and test of the star tracker and for launch and early orbit check out leading to full scientific operations. The respondent is responsible for identifying the star tracker requirements and providing all aspects of the star tracker (either directly, or through purchasing or teaming arrangements). The period of performance for this interval is expected to last approximately 36-48 months, starting in early 2017. This date may change depending upon selection timelines and budget allocations.

POD Response Instructions for Development Support

The respondent shall:

- 1) Identify available design and modeling capabilities required to support development of the star tracker. Describe the level of experience with similar star trackers for relevant personnel.
- 2) Identify fabrication and testing facilities that will be required to support development and test of the star tracker.
- 3) Identify previous star trackers provided that have flown on space flight missions
 - Identify which missions they have successfully supported in this capacity and provide a customer reference POC.
 - Provide information on recent similar star tracker designed and delivered, and describe how that experience is applicable to this mission. This shall include basic information on scope of work, how well the fielded star tracker met the cost and technical requirements, and how well the fielded star tracker met the proposed schedules.
- 4) Provide a Rough Order of Magnitude (ROM) cost estimate and timeline for the scope of the design, fabrication, and testing of the star tracker. Neither ROM nor timeline will be considered a binding commitment, but will serve as a consideration during the partnership evaluation. In consideration of the rigid cost cap for Explorer

missions, the cost ROM for the star tracker will be an important consideration. The respondent is invited to comment on the reasonableness of the ROM cost estimate.

- 5) Provide cost data for previous similar star trackers and details for cost differences from bid cost.
- 6) Present ideas and methods of keeping costs low and the risk of cost growth low, including how they would utilize existing open market hardware to minimize costs and provide a more robust system.

5.0 Additional Information

For pre-selection or development support, the respondent can provide any additional information on any other pertinent missions for which his/her establishment, and any partners/vendors proposed, have provided star trackers, and identify the relevant details of similar systems. The respondent may also identify any other ideas and related activities, which your organization is or has been involved with, and the significance of that activity to this mission.

6.0 General Instructions for POD Response

Potential respondents are asked to contact the GSFC Explorer team **by 5 PM EDT on August 8th, 2014** with a **Notice Of Interest** (intentionally not called a notice of intent). This Notice of Interest does not create an obligation to respond to the POD, but allows the GSFC Explorer team to disseminate additional details on the mission parameters and to provide answers to questions from potential partners. **Notice of Interest respondents will receive a document containing additional details on the proposed mission, which can be used to facilitate a focused response to the partnership opportunity.** These details are competition sensitive and are not to be shared outside the team necessary to prepare a response.

After receipt of the mission document, respondents may send questions to the GSFC Explorer Team at the E-mail address listed below. All questions and answers will be made available to all those who respond to the Notice of Interest. The source of the questions shall be held confidential. Questions and answers that contain information unique to a respondent's proprietary approach will not be shared if they are identified as such.

Notice of Interest shall be sent to Mike Adams (michael.l.adams@nasa.gov) via email with 'Notice of Interest' in the subject line, a simple sentence or two expressing interest and an email address to send further information.

For purposes of this partnership opportunity, the GSFC contact is Mike Adams, michael.l.adams@nasa.gov, 301-286-2010, and the backup is Alice Liu, kuo-chia.liu-1@nasa.gov, 301-286-1270.

Responses to the POD shall:

- 1) Be in a PowerPoint presentation format or word document format that shall not exceed 25 pages. The font size for the text shall be no smaller than 12 point.
- 2) Be as specific as possible about the proposed star tracker.
- 3) Address all requirements noted in sections 3.0 through 7.0 of this document.

Responses will be treated as proprietary information and controlled as such.

Final presentation packages must be received via email **by 5 PM (EDT) on August 15th, 2014**. Provide the presentation to the GSFC contact listed above.

Highly ranked proposers may be asked to participate in an informational telecon with the GSFC instrument team. The telecon would be for clarification of proposal information and may be held prior to award, if deemed necessary by the Government. The telecons would be between the GSFC instrument team and each proposer individually.

7.0 Selection Criteria for Awarding Partnership Opportunity

Selection criteria will be consistent with the desire to encourage cost effective partnerships between the Government and Industry. The information requested in Section 7.0 will allow the evaluators to determine how appropriate the respondent's star tracker is to this Explorer mission.

Selection Criteria

Proposal/Pre-selection Support (30 points)

- Experience, team skills and past performance in proposal phases.
- Resource commitment during proposal phase.
- Identification and description of key critical areas.
- Understanding and addressing general requirements and needs for the proposed star tracker.
- Recommended design studies.

Development Support (70 points)

- Reasonableness of cost and schedule estimates with supporting information from similar previous missions
- Experience and past performance in development phases.
- Experience and past performance with respect to similar space flight star trackers. Experience developing and implementing similar space flight star trackers is a minimum requirement.
- Completeness of identification of functions by mission phase.
- Cost control measures.
- Reasonableness of design and modeling capabilities to support the effort.
- Reasonableness of fabrication and testing facilities to support the effort.
- Mass of the star tracker.
- Power and thermal control for the star tracker.

- Ability to survive and operate in the target environment.
- Ability of system to meet or simplify other mission requirements or challenges the respondent identifies.

8.0 Acronyms List

EDT	Eastern Daylight Savings Time
GSFC	Goddard Space Flight Center
MoO	Mission of Opportunity
PEA	Program Element Appendix
POC	Point of Contact
POD	Partnership Opportunity Document
ROM	Rough Order of Magnitude
SALMON-2	Second Stand Alone Mission Of Opportunity
SOW	Statement Of Work